The dual way of Non-Euclidean Duality

are Soviet.

SUBMITTED: February 17, 1958

Carl [illegible]

Inopril. Ye V

SOV/56-35-4-7/55

AUTHOR: Varshalovich, D.

TITLE: The VIII Annual Congress of Nuclear Spectroscopy (VIII yeshegodnoye soveshchaniye po yadernoy spektroskopii). I

PERIODICAL: Uspekhi fizicheskikh nauk, 1958, Vol 65, Nr 4, pp 721 - 722 (USSR)

ABSTRACT: The 8th Congress of Nuclear Spectroscopy took place in Leningrad from January 27 to February 4, 1958. It was attended by 500 scientists from the USSR, further by scientists from China, France, Poland, Czechoslovakia, Hungary, Eastern Germany, Yugoslavia, and the Mongol Democratic Republic. 4 main lectures and about 90 reports were heard. The main lectures dealt with problems concerning nuclear models, the α- and β-decay, γ-radiation, interna[illegible] conversion, and nuclear isomerism. B.S.Dzhelepov, Corresponding Member, Academy of Sciences, USSR, opened the conference. Lectures were held by: V.Yu. Gonchar, Ye. V. Inopin, S.P.Fayiko (FTI A. [illegible] on light nuclei and generalized nuclei models; [illegible] (BAN SSSR-Library AS USSR), Yu.N.Ostroumov (Kiev State University), L.A.Sliv (LFTI-Leningrad Physico-Technical Institute) et al. on levels in Mg^{24}, Mg^{25} and A.[illegible] D.V. Alkhazov, A.P.Grinberg, G.M.[illegible], K.[illegible] and I.Kh.Lemberg (LFTI) on having found the rotational levels at E(1 MeV in Cr, Fe, and Ni nuclei. The same researchers also reported on the discovery of vibrational levels in W^{182}, W^{184}, W^{186} nuclei by means of the method of the Coulomb (Kulon) excitation at $E_{ex.} \sim$ [illegible] MeV. L.K.[illegible] (BAN SSSR) gave a survey report [illegible] lectures were held also by D.P.Grechukhin (AN USSR - AS USSR) on collective transitions in deformed nuclei with the help of the Shpinel' 2 MIFI M20 (MIFI Scientific Research Institute of Physics, Moscow State University) on the [illegible] and the probability of corresponding β- and β+ transitions in odd nuclei; D.F.Zaretskiy (AN SSSR - AS USSR) on the influence of the spin-orbital coupling upon the magnetic moments of the nuclei, A.I.Baz' (AN SSSR - AS USSR) on the existence of light nuclei with high neutron or proton excess; V.A.Kravtsov (LPTI-Leningrad Polytechnic Institute) on the formation of nuclear pairs in n, [illegible] Pilipe, G.N.Sovtsova, A.A.Ter-Martirosyan [illegible] on alpha decay on rotational levels of [illegible] nuclei; V.S. Zudov (AN SSSR - AS USSR) on alpha decay of superheavy nuclei (survey); A.I.Akhiyezer, D.P.Grechukhin, V.A.[illegible], V.V.Ershler (ITU AN SSSR) on polarization [illegible] at electrons emitted in the gateway of Tl^{204}, [illegible], $Ag^{[illegible]}$, Sm^{153}, Re^{186} (α[illegible] as well as in that of Sr^{87} and $Y^{[illegible]}$ (α[illegible] 2, α = -1); V.P.Sudakov (AN SSSR - AS USSR) on measurements of the (β-γ) angular correlations in $Sr^{[illegible]}$; N.A.Burkov and Yu.V.Terekhov (ITU AN SSSR) on investigations of the electron-neutron correlations and the [illegible] scattering of γ-radiation; B.K.Kerimov and I.M.Dalkhatov (MGU-Moscow State University) on the [illegible] of longitudinally polarized electrons; A.I.Akhiyezer and [illegible] Percy (MGU) on the effective cross section of the [illegible] of polarized electrons and positrons at polarized electrons; Ya.E.Chelara and [illegible] Rikas on the interpretation of the intensity of the components of the [illegible] according to the Fermi theorem; I.M.Band, [illegible], and Yu.P.Suslov, LGU (Leningrad State University), on the computation of the probability of the permitted and of the forbidden capture of electrons by a nucleus.

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21(7)

AUTHORS: Tret'yakov, Ye. F., Kondrat'yev, L. N., Khlebnikov, G. I., Gol'din, B. L.

SOV/56-36-2-3/63

TITLE: The Spectrum of Internal Conversion Electrons Accompanying α-Decay of Pu^{238} and Pu^{240} (Spektr elektronov vnutrennney konversii, soprovozhdayushchikh α-raspad Pu^{238} i Pu^{240})

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1959, Vol 36, Nr 2, pp 362-366 (USSR)

ABSTRACT: The investigation of the decay of even-even nonspherical nuclei and of the energy of excited levels, especially the α-decay of Pu^{238} and Pu^{240}, is of very great theoretical importance. Investigation of the α-decay of these nuclei and of the levels of daughter nuclei occurring in this decay is carried out either by the α-spectrometry method, by that of γ-γ coincidence, or, as in the present paper, by the analysis of the conversion electron spectrum accompanying this decay. Measurements were carried out by means of a β-spectrometer with toroidal magnetic field and α-e-coincidence circuit. The method has already been described (Refs 1, 2). Scintillation counters with stilbene

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crystals were used for β-counting. Electron energy was determined by comparison with the conversion electron energy of the transitions 2+→0+ (43.5 kev) and 4+→2+ (99.8 kev) in U^{234}, the daughter nucleus of Pu^{238}. (These exact data were obtained by Perlman (Perelman)(Ref 3)). For the investigation of the conversion electron spectrum occurring in the α-decay of Pu^{238} which therefore supplies data concerning the level of U^{234}, a source with 1 cm diameter and an intensity of 40μC was used. The results obtained by the investigation are shown by figure 1 (course of the spectrum with assignation of individual peaks), figure 2 (scheme of U^{234}-levels: 499 kev(8+), 295.9 kev(6+), 143.3 kev(4+), 43.5 kev(2+), containing data from references 3 and 4), and by table 1 (energy of U^{234}-levels and intensity of α-lines of Pu^{238}, containing data from references 3, 4, 5).

 For the investigation of the conversion spectrum of Pu^{240}

The Spectrum of Internal Conversion Electrons SOV/56-36-2-3/63

Accompanying α-Decay of Pu^{238} and Pu^{240}

a source of only 5μC was used, and the spectrum was investigated within the range of 20 -220 kev. Figure 3 again shows the spectrum, figure 4 the level scheme of U^{236} (daughter nucleus of Pu^{240}): 309 kev (6+), 239 kev (3?), 210 kev (1?), 148.9 kev (4+), 45.3 kev (2+). The lines with (?) are from reference 5, but were also observed by Kondrat'yev et al. (Ref 6). Table 2 shows the intensities of the α-lines (Pu^{240}) and the energies of the U^{236}-levels in comparison with the results obtained by other authors (Refs 3, 6, 7). The authors finally thank G. I. Grishuk, V. F. Konyayev and Yu. N. Chernov for helping to carry out experiments. There are 4 figures, 2 tables, and 7 references, 5 of which are Soviet.

SUBMITTED: June 14, 1958

Card 3/3

21(0),24(5)

AUTHORS: Gol'din, L. L., Novikova, G. I., Ter-Martirosyan, K. A.

SOV/56-36-2-25/63

TITLE: On the Shape of α-Active Nuclei (O forme α-aktivnykh yader)

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1959, Vol 36, Nr 2, pp 512-516 (USSR)

ABSTRACT: Theoretical papers (Refs 1-5) have recently been published, in which the intensity of α-decay on levels in one and the same rotational band were calculated. Intensity was found to be dependent to a considerable extent on the shape of the nucleus. Utilizing this sensitivity, the authors investigate the shape of various heavy nuclei with the aid of the intensity of α-decay on successive levels of the main rotational band of the daughter nucleus. Proceeding from the results obtained by a previous paper (Ref 5), the deviation from the spherical shape is calculated according to

$$R(\vartheta) = r_0\left[1 + \alpha_2 P_2(\cos\vartheta) + \alpha_4 P_4(\cos\vartheta)\right].$$

The coefficients α_2 and α_4 of the development according to Legendre polynomials P_2 and P_4 are calculated, as also

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$u^2 = (a^2 - b^2)/a^2 \approx 2\Delta R/R$ (a = the large, b = the small semiaxis of the nucleus), and further also the quadrupole moment Q_o and the 2^4-pole moment Q_4. The numerical results obtained for four even and three odd nuclei are shown in a table, and the 7 diagrams of figure 1 show the influence exercised by the shape of the nucleus on α-decay probability in the case of transitions to excited levels of the main rotational bands. Numerical results are in good agreement and show that the contribution made by the term $\alpha_1 P_1(\cos\vartheta)$ to the nuclear shape is considerable.

Nucleus	u^2	a_2	a_1	Q_o[barn]	Q_4[barn]
U^{235}*	0.34	0.161	0.058	13.7	-3.6
Np^{237}*	0.34	0.160	-0.056	14.5	-3.6
Th^{229}	0.39	0.177	-0.030	14.7	+2.0
Pu^{238}	0.31	0.150	-0.052	12.3	-2.9
U^{236}	0.28	0.119	-0.026	10.9	-0.7
U^{234}	0.33	0.148	-0.041	11.7	-0.9
Th^{228}	0.39	0.173	-0.025	14.1	-3.0

On the Shape of α -Active Nuclei SOV/56-36-2-25/63

(The original table contains numerous further data concerning these 7 nuclei, as e.g. the ratios of the decay probabilities for various states).

The authors finally thank G. M. Adel'son-Vel'skiy and A. P. Birzul for mathematical computations. There are 2 figures, 1 table, and 6 references, 3 of which are Soviet.

SUBMITTED: July 2, 1958

Card 3/3

TRET'YAKOV, Yu.F.; ANIKINA, M.P.; GOL'DIN, L.L.; NOVIKOVA, G.I.; PIROGOVA, N.I.

Spectrum of internal conversion electrons accompanying α-decay of U^{233} and the energy level diagram of Th^{229}. Zhur.eksp.i teor.fiz. 37 no.4:917-927 O '59. (MIRA 13:5)
(Uranium--Isotopes) (Thorium--Isotopes) (Electrons)

NOVIKOVA, G.I.; VOLKOVA, Ye.A.; GOL'DIN, L.L.; ZIV, D.M.; TRET'YAKOV, Ye.F.

Radioactive decay of Ac^{227} and excited levels of Fr^{223} and Th^{227}. Zhur.eksp.i teor.fiz. 37 no.4:928-937 O '59. (MIRA 13:5)

(Actinium--Isotopes) (Thorium--Isotopes)
(Francium--Isotopes)

GOL'DIN, L.L.; NOVIKOVA, G.I.; PIROGOVA, N.I.; TRET'YAKOV, Yu.F.

Alpha-decay of Th^{229}. Interaction of nuclear levels. Zhur. eksp.i teor.fiz. 37 no.4:1155-1157 O '59.
(MIRA 13:5)

(Thorium--Decay)

8287

S/120/60/000/02/002/052
E032/E314

AUTHOR: Gol din, L L

TITLE: Calculation of the Losses of Particles Due to Scattering by a Gas Taking Into Consideration the Adiabatic Contraction of the Beam

PERIODICAL: Pribory i tekhnika eksperimenta 1960, No 2 pp 14 - 15 (USSR)

ABSTRACT: Particle losses due to scattering by the residual gas have been computed both for ordinary accelerators [Blachman and Courant (Ref 1)] and for accelerators with strong focusing [Berestetskiy et al (Ref 2)]. However no account has so far been taken of the adiabatic contraction of the beam during the acceleration, which leads to a reduction in these losses The problem is solved in the present paper for a circular chamber (two-dimensional problem) on the non-relativistic approximation. Following the method put forward by Berestetskiy et al (Ref 2), it is easy to show that the particle-distribution function $\Phi(r, a)$ satisfies the equation

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S/120/60/000/02/002/052
E032/E314

Calculation of the Losses of Particles Due to Scattering by a Gas Taking Into Consideration the Adiabatic Contraction of the Beam

$$\frac{\partial \Phi}{\partial \tau} = \frac{\partial^2 \Phi}{\partial a^2} + \frac{3}{a} \frac{\partial \Phi}{\partial a} \qquad (1)$$

$$\Phi(\tau, a_{max}) = 0 \qquad (2)$$

where $a = (\rho/R) \times \sqrt{H(\tau)/H_0}$ ρ is the radius, R is the radius of the chamber $H(\tau)$ is the magnetic field at the given instant of time, H_0 is the magnetic field at injection and τ is the time measured from the beginning of the acceleration process, i.e.

$$\tau = \tau_0 H_0/H \qquad (3),$$

τ_0 is the value of τ at the instant of injection and is given by

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S/120/60/000/04/002/052
E032/E514

Calculation of the Losses of Particles Due to Scattering by a Gas, Taking Into Consideration the Adiabatic Contraction of the Beam

$$\tau_o = \frac{1}{2T_o} \frac{|\varphi|^2 \, \varphi^2_{max}}{4\pi M^2} L^3 \frac{N}{R^2 V} L(Ze^2)^2 \qquad (4)$$

where T_o is the injection energy

φ is the Floquet function normalized so that $\varphi\varphi^* + \nu\varphi^2 = 2\pi$

L is the length of the chamber

M is the number of periodic elements in the magnetic system

N is the number of molecules of the gas per cm^3

V is the energy received by a particle per revolution

Z is the atomic number of the residual gas and

L is the logarithm of the ratio of the maximum and minimum angles of scattering.

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Calculation of the Losses of Particles Due to Scattering by a Gas Taking Into Consideration the Adiabatic Contraction of the Beam

For air, Eq (4) reduces to

$$\tau_o = -2.6\cdot10^{-8}\left(\frac{L}{R}\right)^2 L \frac{\varphi^2_{max}}{M^2} \frac{T_o}{V} \frac{P}{T_o^2} \qquad (5)$$

if L is expressed in cm T_o in MeV and P in mm Hg.

It can easily be shewn that

$$a_{max} = \sqrt{\tau_o} \qquad (6)$$

so that the problem is reduced to the solution of Eq (1) in the region shown in Figure 1. The number of particles K( ) which remain in the chamber at any given time is given by

$$K(\ ) = \int_0^{a_{max}} (\ \ a)a^3 da \qquad (7)$$

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Calculation of the Losses of Particles Due to Scattering by a Gas, Taking Into Consideration the Adiabatic Contraction of the Beam

apart from a constant multiplier. The solution of the problem obtained by a numerical method is shown in Figure 2. It was assumed that the initial distribution was in the form of a δ-function at zero. It may be noted that according to Eq (3), the quantity τ increases from τ_0 to zero during the acceleration process so that the maximum value is $(\Delta\tau)_{max} = -\tau_0$. The difference between the curves in Figure 2 is due only to attenuation. The curve $\tau_0 = \infty$ corresponds to the case where the adiabatic contraction of the beam is neglected. The author is grateful to G.M. Adel'son-Bel'skiy and I.L. Il'ina for carrying out the numerical computations.

Figure captions: Figure 1 - region in which the solution of Eq (1) is determined, Figure 2 - particle losses as a function of $\Delta\tau$ for different τ_0.

Card5/6 This is a complete translation.

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R000515630004-7"

S/030/60/000/05/35/056
B015/B0C8

AUTHOR: Gol'din, L. L., Doctor of Physical and Mathematical Sciences

TITLE: Investigations on Nuclear Spectroscopy

PERIODICAL: Vestnik Akademii nauk SSSR, 1960, No. 5, pp. 90-92

TEXT: The 10th Conference on nuclear spectroscopy was held in Moscow from January 19 to 27, 1960. It dealt mainly with the experimental investigation of nuclear levels as well as with theoretical problems related with the investigation of the atomic nuclear structure. The investigation of the quantum characteristic of the nuclear level is described as one of the essential problems of nuclear spectroscopy. 2 reports by V. A. Lyubimov and Ya. A. Smorodinskiy dealt with modern problems of the β-decay and the weak interaction constant. P. Ye. Spivak and L. A. Mikaelyan reported on the accurate measuring of the longitudinal polarization of the β-decay electrons. V. V. Balashev and V. G. Neudachin investigated nuclear reactions in light nuclei. The investigation of nuclei was made possible by their mass production on the synchrocyclotron of the Ob"yedinennyy institut yadernykh issledovaniy v Dubne (Joint Institute of Nuclear Research at Dubna).

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Investigations on Nuclear Spectroscopy

S/030/60/000/05/35/056
B015/B008

B. S. Dzhelepov, R. B. Ivanov, V. G Nedovesov, Yu. T. Purzanovich and S. A. Baranov, A G. Zelenkov, and V. M. Kulakov reported on work carried out on two giant a spectrometers which were put into operation recently in Leningrad and Moscow. A. S. Davydov reported on the theory of deformed nuclei. A. S. Davydov and G. F Filippov put up a hypothesis lately that many deformed nuclei have the form of triaxial ellipsoids and not of ellipsoids of revolution, as was assumed by Bohr and Mottelson. D. F. Zaretskiy reported on the nucleonic pair interaction. A. I. Alikhanov and V. A. Lvubimov reported on their experiments which led to the discovery of the Zeeman effect of nuclear levels A number of new instruments was described next, among them the prism β-spectrometer by V. M. Kel'man, B. P. Peregud, and V. I. Skopin with a resolving power of 0.013%, as well as a new β-precision spectrometer by L. V. Groshev, A. K. Demidov, and V. N. Lutsenko. It was stated on the occasion of the 10th anniversary of the Conference on Nuclear Spectroscopy that the number of delegates has increased during the last 10 years by 10 times and that the Soviet nuclear spectroscopy has taken one of the first places in world science.

Card 2/2

S/048/61/025/002/012/016
B117/B212

AUTHORS: Tret'yakov, Ye. F., Pirogova, N. I., Gol'din, L. L.

TITLE: Conversion transitions accompanying the alpha decay of Th^{229}, and the level scheme of Ra^{225}

PERIODICAL: Izvestiya Akademii nauk SSSR. Seriya fizicheskaya, v. 25, no. 2, 1961, 274-282

TEXT: The present paper was read at the 10th All-Union Conference on Nuclear Spectroscopy (Moscow, 1960), and also at the 11th Annual Conference on Nuclear Spectroscopy (Riga, January 25 to February 2, 1961). It presents test results that have been obtained by the authors by using an advanced method of studying the spectrum of conversion electrons of Ra^{225}. The investigations were carried out by using not only α-e_K but also γ-e_K (spectrum of conversion electrons in coincidence with gamma rays) and e_K-γ coincidences (gamma spectrum in coincidence with the electron line). The conversion electrons were separated by means of a torroidal beta spectrometer of high intensity

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Conversion transitions ...

(Ref. 4). The gamma quanta were recorded by means of a scintillation gamma spectrometer, which consisted of a NaI(Tl) crystal, an amplifier, and a one-channel analyzer. The measurements were made with a Th^{229} isotope which had been obtained by chemical separation of thorium from U^{233} that had been stored for a long time. Two test series have been made. Fig. 3 shows the internal-conversion electron spectrum for one of the series. A list of the conversion transitions obtained by analysis of the conversion lines of Ra^{225} is given in Table 2. Based on the results obtained, a new level scheme has been suggested for Ra^{225} (Fig. 4). The data found during the investigation of alpha radiation of Th^{229} (Ref. 2) are given on the left side of the scheme, while on the right side, there are the level parameters which had been found by analyzing the conversion-electron spectrum. It follows from Fig. 4 that it had been necessary to introduce a new level around 25.3 kev below α_0. This necessity arose due to a 25.3-kev transition with high intensity (70%) that was in a cascade with a 17.3-kev transition. Besides, the investigation of e_K-γ coincidences showed that conversion electrons of 25.3-kev transitions (Fig. 1) and 42.7-kev transitions coincide with gamma quanta of energies of up to 200 kev. The necessity of intro-

Conversion transitions ...

ducing a level below that of α_0 agrees with results given in Ref. 3. Apart from the above mentioned level, also a level near α_{214} had to be introduced. According to measurements, this level energy is 210.7 kev, with respect to α_0. Several cascades confirmed this value that had been calculated for a direct transition: 17.3 + 193.4 = 210.7; 86.3 + 124.4 = 210.7; 56.6 + 154.2 = 210.8. It is pointed out that the level introduced does not contradict the existing Th^{229} spectrum since the resolution of the alpha spectrometer used was not high enough to determine an expansion of the α_{214} line by 1.2 kev. The energy of the 86.3-kev transition is almost the same as that of the α_{88} transition that had been observed in the investigation of the alpha spectrum. It had to be classified as a transition from the 210.7-kev level to the 124.4-kev level since it coincides almost completely (about 80%) with the XK-radiation. On the assumption (Ref. 2) that the α_{214} and α_{246} levels are the first two levels of the rotational band, a transition of the type M1 + E2 must take place with a considerable intensity. In fact, such a transition was established. Its energy is 32 ± 0.7 kev and its intensity is about 5%. Spins and parities of levels

Conversion transitions ...

(α_0 and above) have been introduced on the basis of data on the multipolarity of transitions and intensities. The α_{214} level with a spin 5/2 and a positive parity is taken as starting point. Studies of the spin and the parity of the level ($\alpha_{-25.3}$) and of the α_0 and α_{20} levels and their assumed spin values led to the conclusion that the ($\alpha_{-25.3}$) level has a spin of 5/2 or 3/2 and a negative parity. In the alpha spectrum of Th^{229} no transition to the ($\alpha_{-25.3}$) level could be found. This forbidden transition for an alpha decay seems to be due to the fact that its parity is opposite to that of other levels of Ra^{225}. The authors thank G. I. Gribchuk, V. F. Konyayev, Yu. N. Chernov, and S. V. Kalashnikov for assistance in the experiments. G. I. Novikova is mentioned. There are 4 figures, 2 tables, and 9 references: 6 Soviet-bloc.

ASSOCIATION: Institut teoreticheskoy i eksperimental'noy fiziki Akademii nauk SSSR (Institute of Theoretical and Experimental Physics of the Academy of Sciences USSR)

S/049/61/000/011/005/017
B104/B147

24.6730

AUTHORS Vladimirskiy, V. V., Doctor of Physics and Mathematics.
Gol'din, L. L., Doctor of Physics and Mathematics

TITLE A new powerful proton synchrotron

PERIODICAL: Akademiya nauk SSSR. Vestnik, no. 11, 1961, 44-54

TEXT: A new large $7 \cdot 10^9$ ev proton synchrotron was put into operation at the Institut teoreticheskoy i eksperimental'noy fiziki Akademii nauk SSSR (Institute of Theoretical and Experimental Physics of the Academy of Sciences USSR). The principle of strong focusing makes it possible to build lighter, cheaper machines of higher efficiency with equal maximum acceleration. Fig. 1 shows the cross section of the vacuum chamber and the poles of the electromagnet; the chamber is much smaller than that of the accelerator at Dubna. The magnetic field of the required shape is obtained between two hyperbolic poles and the central pole. The poles of the electromagnet correspond to $xy = 50 \cdot 5$ cm^2 and are machined to an accuracy of 0.05 mm. The magnetic ring, 80 m in diameter, consists of 112 magnetic blocks weighing 35 tons each; they are arranged with an

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A new powerful proton synchrotron

accuracy of 0.1 mm. The field in the center of the chamber amounts to ~8500 oe. Fig. 3 shows the plan of the accelerator building. A proton beam electrostatically accelerated up to about 4 Mev is injected into the ring, accelerated to $7 \cdot 10^9$ ev, and finally ejected through the exit channels into the experimenting rooms, the large one of which is 60 m long and 42 m wide. They are separated from the metal ring by 2 m thick detachable concrete walls. According to its energy, the accelerator of the fourth largest in the world and the second largest in the USSR, after that at the Ob"yedinennyy institut yadernykh issledovaniy (Joint Institute of Nuclear Research) at Dubna (10^{10} ev). The experience gained during the construction of this accelerator is to be utilized for the construction of a 60-70 billion ev accelerator. The energy of accelerated protons reached $7.3 \cdot 10^9$ ev in October 1961, and thus surpassed the energy planned. The intensity of the beam is to be further increased. Energy are 2 figure.

Card 4/

GOL'DIN, L.L.; SKACHKOV, S.V.; SHORIN, K.N.; TOLOSHKINA, V.A., red.; VLASOVA, N.A., tekhn. red.

[Magnetic measurements in charged particle accelerators] Magnitnye izmereniia v uskoritel'nykh zariazhennykh chastits. Moskva, Gosatomizdat, 1962. 55 p. (15:4)
(Particle accelerators) (Magnetic measurements)

S/120/62/000/004/030/047
E140/E420

AUTHORS: Kulakov, F.M., Kardash, A.A., Bobovikov, R.S., Spevakova, F.M., Gol'din, L.L., Kleopov, I.F., Koshkarev, D.G., Radkevich, I.A., Sokolovskiy, V.V., Sharnov, B.I.

TITLE: The system for magnetic field correction of the proton synchrotron

PERIODICAL: Pribory i tekhnika eksperimenta, no.4, 1962, 158-167

TEXT: The magnetic field configuration in the strong-focused 7 Gev machine is adjusted by a series of correction systems permitting the betatron oscillation frequency to be controlled and resonance disturbances of the orbit to be eliminated. The system used for field correction is described together with the system for switching and exciting the windings, with experimental data on their effect on the beam. The windings permit adjustment of the magnetic field decay index, the azimuthal asymmetry of the field, compensation of the nonlinear distortion of the field with saturation, correction of the position of the neutral plane and the differences between the focusing and

Card 1/2

The system for magnetic field ...

defocusing groups of blocks. There are two sets of these windings, the "gradient" and the "nonlinear" windings on the magnetic pole surfaces facing the chamber. Measured data presented in the article indicate the effectiveness of the corrections in stabilizing the betatron frequency. However, it is considered that further adjustments will be made in the course of the work. There are 15 figures.

ASSOCIATIONS: Institut teoreticheskoy i eksperimental'noy fiziki GKAE (Institute of Theoretical and Experimental Physics GKAE)
Nauchno-issledovatel'skiy institut elektrofizicheskoy apparatury GKAE (Scientific Research Institute for Electrophysical Apparatus GKAE)

SUBMITTED: March 29, 1962

CIA-RDP86-00513R000515630004-7"

S/120/62/000/004/034/047
E140/E420

AUTHORS: Talyzin, A.N., Gol'din, L.L., Trokhachev, G.V., Radkevich, I.A., Mozalevskiy, I.A., Sokolovskiy, V.V., Kukavadze, G.M., Belozerova, L.A., Borisov, V.S., Bysheva, G.K., Veselov, M.D., Goryachev, Yu.M.

TITLE: Investigation and correction of the magnetic characteristics of the proton synchrotron C-blocks at small fields

PERIODICAL: Pribory i tekhnika eksperimenta, no.4, 1962, 184-192

TEXT: Comparative measurements are made on the C-blocks in the residual field (~35 Oe) the injection field (87 Oe) and the field at the beginning of the acceleration cycle (117 Oe). The iron for the magnet blocks was not pre-selected. This had no substantial effect on differences in the dynamic characteristics of the C-blocks, but the differences in residual field constituted 4.25% on the average and reached up to 10%. The mean-square deviation of the magnetic induction was 4.25%, and 1.4% in the injection field, thus exceeding by far the allowable tolerances. The variations were compensated by shunt resistances

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and by changing the order of the blocks. The present article is concerned with the measurement of the magnetic field intensity and its gradient in the residual field, the compensation by resistances connected across compensation windings, compensation of C-blocks at injection, with investigation of the dynamic characteristics. The equilibrium orbit in the synchrotron has not yet been studied in detail but it is found that either as a result of these corrections or the arrangement of the blocks, the loss of particles is fairly small. There are 7 figures and 1 table.

ASSOCIATIONS: Institut teoreticheskoy i eksperimental'noy fiziki GKAE (Institute of Theoretical and Experimental Physics GKAE)
Nauchno-issledovatel'skiy institut elektrofizicheskoy apparatury GKAE (Scientific Research Institute for Electrophysical Apparatus GKAE)

SUBMITTED: March 31, 1962

S/120/62/000/004/037/047
E140/E420

24630

AUTHORS: Gol'din, L.L., Stadnikov, A.G.

TITLE: Arrangement of the magnet blocks along the accelerator ring

PERIODICAL: Pribory i tekhnika eksperimenta, no.4, 1962, 199-202

TEXT: The scatter in low-field characteristics (injection conditions) of the manufactured magnets is such that special measures must be taken to reduce its effects. The article describes the theoretical considerations and the computations undertaken to find an arrangement of the magnets such that the distortion of the equilibrium orbit be minimized. The computations were carried out manually, with verification of the final arrangement on a computer. Good agreement was obtained. There are 2 figures.

ASSOCIATION: Institut teoreticheskoy i eksperimental'noy fiziki GKAE (Institute of Theoretical and Experimental Physics GKAE)

SUBMITTED: March 29, 1962

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S/120/62/000/004/039/047
E039/E420

AUTHORS: Borisov, V.S., Gol'din, L.L., Goryachev, Yu.M., Grekov, N.N., Ryabov, A.P., Skachkov, S.V., Talyzin, A.N.

TITLE: Measurement of the basic magnetic characteristics of the proton synchrotron C-blocks

PERIODICAL: Pribory i tekhnika eksperimenta, no.4, 1962, 206-212

TEXT: The ratio of the average field to its gradient $\bar{B}/\nabla\bar{B}$ is measured to an accuracy of 0.1% by an absolute method on a number of C-blocks chosen as standard. A comparison is them made with the other blocks. The apparatus consists of three series of six coils mounted on a marble slab 2 m long and 80 x 27 mm^2 cross-section and is supported on the two geodetic markers on the blocks. Signals obtained from these coils are proportional to the rate of change of the magnetic field at the orbital position and the difference between the inner and outer coils is proportional to the rate of change of the field gradient. Values of $\bar{B}/\nabla\bar{B}$ measured on three separate identical coil systems gave the following results: (1) 68.19 mm; (2) 68.05 mm; (3) 68.28 mm giving a mean value of

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Measurement of the basic magnetic ...

68.17 mm. The measurement was repeated using a "point" method with two coils only, one inside and one outside the equivalent orbit. Values of $B/\nabla B$ were made at 19 points in the blocks and at 8 points between blocks for two coil systems. Comparison of results shows: average of first method 68.19 mm; first "point" method value 68.21 mm, second "point" method value 68.40 mm. The high value for the second "point" method is not accounted for and an average of the first two figures is used in calculations. The distribution of the dynamic component of the field and its gradient in the C-blocks and in the gaps between blocks is measured by a compensation method and the residual field by means of a rotating coil. For a field of 5000 gauss

$$\frac{\overline{\nabla B}_{gap}}{\overline{\nabla B}_{block}} = 0.395 \quad \text{and} \quad \frac{\overline{B}_{gap}}{\overline{B}_{block}} = 0.581$$

Measurements of the dependence of $B/\nabla B$ on the induction are also made. These measurements aid the final choice of the radial distance between the focusing and defocusing groups of blocks and

in determining the basic parameters of the magnetic field correction system. There are 8 figures.

ASSOCIATION: Institut teoreticheskoy i eksperimental'noy fiziki GKAE (Institute of Theoretical and Experimental Physics GKAE)

SUBMITTED: April 11, 1962

S/120/62/000/004/040/047
E039/E420

AUTHORS: Veselov, M.A., Gol'din, L.L., Kirpichnikov, I.V., Lomkatsi, G.S., Sidorenko, Z.S., Sysoyev, Ye.A.

TITLE: Investigation of the magnetic field configuration in the X-blocks of the proton synchrotron

PERIODICAL: Pribory i tekhnika eksperimenta, no.4, 1962, 212-217

TEXT: The magnetic field configuration is measured in 14 compensating blocks at various levels of induction from 80 gauss up to 8000 gauss. Magnetic field gradients are measured with an accuracy of better than 0.1% and the displacement of the neutral point obtained with an accuracy of 0.05 to 0.07 mm. A plexiglass carriage is located on the magnet poles and can traverse the whole length of the block (1910 mm). This carriage contains three pairs of permalloy probes for measurements in low fields and three pairs of coils for the medium and large fields. The field characteristics are measured at 31 points along the 14 X-blocks. The distribution of the field and its gradient is obtained near the axis of symmetry for 5 values of induction (82, 106, 210, 2600 and 7500 Oe) and on 6 of the C-blocks at

Investigation of the magnetic ...

8400 Oe. These measurements are compared with similar measurements on C-blocks. It is shown that displacement of the neutral point depends on the residual field. Displacement also occurs in strong fields because of core saturation. The results are presented graphically and discussed in some detail. The coordinates of the pole pieces with respect to the geodetic markers are determined to an accuracy of 0.03 to 0.04 mm. There are 8 figures.

ASSOCIATION: Institut teoreticheskoy i eksperimental'noy fiziki GKAE (Institute of Theoretical and Experimental Physics GKAE)

SUBMITTED: March 31, 1962

AUTHORS: Barmin, V.V., Bysheva, G.K., Fomanov, G.K., Kaplan, I.I., Andreyev, V.N., Veselov, M.A., Gol'din, L.L., Lukin, V.N., Radkevich, I.A., Sokolovskiy, V.V., Stadnikov, A.G.

TITLE: Investigation and correction of the horizontal component of the low-induction magnetic field of the proton synchrotron

PERIODICAL: Pribory i tekhnika eksperimenta, no.4, 1962, 223-229

TEXT: Permalloy probes modulated at 10 kcs were used to measure the position of the neutral plane of the magnetic field. It was found that the distortion of the neutral plane in the residual field was determined mainly by the neutral pole. This distortion decreased as the excitation of the C-blocks was increased. Due to hysteresis effects, the measurements had to be carried out under operating conditions. A description of the probe and its associated circuits is given. The measurements show that 67 of the magnets have a deviation of the neutral plane in the range ± 0.5 mm, 16 magnets have 0.5 to 0.6 mm, 3 magnets 0.6 to 0.7 mm

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Investigation and correction ...

and 12 magnets ≤ 0.7 mm. The average error of measurement is ± 0.17 mm. The method of correcting the neutral plane errors by means of windings on the neutral poles is described. There are 11 figures.

ASSOCIATION: Institut teoreticheskoy i eksperimental'noy fiziki GKAE (Institute of Theoretical and Experimental Physics GKAE)

SUBMITTED: April 11, 1962

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R000515630004-7"

S/120/62/000/004/043/047
E039/E420

AUTHORS: Radkevich, I.A., Sokolovskiy, V.V., Talyzin, A.N., Gol'din, L.L., Bysheva, G.K., Goryachev, Yu.M.

TITLE: Apparatus for measuring magnetic fields with the aid of a permalloy probe and its use for the adjustment of the proton synchrotron

PERIODICAL: Pribory i tekhnika eksperimenta, no.4, 1962, 229-236

TEXT: The probe consists of a plexiglass cylinder along the axis of which is fitted a capillary tube 100 μ inner diameter containing permalloy wire 70 μ diameter and lengths of 10 to 12 mm. Two signal coils of 2500 turns are wound on the cylinder. The signals from these coils are fed into a preamplifier and cathode follower. Measurements of the field and its gradient are made on all 96 C-blocks of the accelerator with an accuracy of better than 0.1 and 0.2% respectively. The dependence of the rate of change of the field with time $\dot{B}$ on the induction B is also obtained. It is noted that $\dot{B}$ varies with a frequency of 600 cycles. This is caused by the use of a 12 phase system rectifier for the magnet supply. The average value of $\dot{B}$ is

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Apparatus for measuring magnetic ...

about 7×10^3 gauss/sec for values of B up to 120 gauss. Differences in induction ΔB between blocks is shown to be about 6 gauss. Results obtained are discussed and the method of using the probe to adjust the accelerator is described. There are 8 figures.

ASSOCIATION: Institut teoreticheskoy i eksperimental'noy fiziki GKAE (Institute of Theoretical and Experimental Physics GKAE)

SUBMITTED: March 29, 1962

S/120/62/000/004/045/047
E039/E420

AUTHORS: Sokolovskiy, V.V., Radkevich, I.A., Gol'din, L.L., Kleopov, I.F., Kulakov, F.M., Luzin, V.N., Mozalevskiy, I.A., Okorokov, I.S., Talyzin, A.N., Trokhachev, G.V.

TITLE: The effect of changes in the regime of the proton synchrotron supply systems on the magnetic characteristics of the blocks

PERIODICAL: Pribory i tekhnika eksperimenta, no.4, 1962, 240-244

TEXT: Measurements are made of the effect on the field and gradient in the C and X-blocks at a level of 90 gauss when the final smoothing condensers are either disconnected or connected symmetrically or non-symmetrically; in addition, the case when the final smoothing condensers are in circuit but the primary smoothing condensers are reduced to one quarter of their usual value is examined. The effect of a shunting thyratron and resistance is also investigated. Changes in the value of the field caused by any of the above do not exceed ± 0.6% while the difference between blocks is about ± 1%. The effect of these

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The effect of changes ...

circuit changes on the rate of growth of the field covers the range +3.2 to -8.3% and for the difference between blocks +5.2 to -6.9%. Changes of the working range without altering the circuit produce significantly smaller effects than are produced by circuit changes, e.g. changes in the average field of separate blocks are 0.2 to 0.3% while the difference between their fields changes only by 0.02 to 0.05%. The introduction of an auxiliary control on the value of the residual field noticeably increases the accuracy of the results, i.e. error reduced to less than a half its previous value. There are 3 figures and 4 tables.

ASSOCIATIONS: Institut teoreticheskoy i eksperimental'noy fiziki GKAE (Institute of Theoretical and Experimental Physics GKAE)
Nauchno-issledovatel'skiy institut elektrofizicheskoy apparatury GKAE (Scientific-Research Institute of Electrophysical Apparatus GKAE)

SUBMITTED: April 11, 1962

CIA-RDP86-00513R000515630004-7"

S/120/62/000/004/047/047
E039/E420

AUTHORS: Vladimirskiy, V.V., Gol'din, L.L., Pligin, Yu.S., Veselov, M.A., Talyzin, A.N., Tarasov, Ye.K., Koshkarev, D.G., Lapitskiy, Yu.Ya., Barabash, L.Z. Kleopov, I.F., Lebedev, P.I., Kuz'min, A.A., Batalin, V.A., Onosovskiy, K.K., Uvarov, V.A., Vodop'yanov, F.A.

TITLE: Adjustment of the acceleration regime of the 7 Gev proton synchrotron

PERIODICAL: Pribory i tekhnika eksperimenta, no.4, 1962, 248-255

TEXT: In order to establish the optimum parameters for programming the control frequency the intensity, position, and frequency and amplitude of transverse oscillation of the beam is measured in three stages: (1) during the first revolution, (2) with a circulating beam and (3) with acceleration. For measurements on the first revolution long afterglow scintillation screens are used which are either observed visually or by means of a television camera. The screens are placed in the sections between magnet blocks; 15 in the initial part and 10 in the final part of the chamber. It is shown that the orbit does not

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Adjustment of the acceleration ...

deviate by more than 1.5 cm from the axis during the first revolution. Circulating beams without acceleration are obtained which continue for 20 to 30 revs. The circulating current is determined by means of a flight tube and the transverse oscillation frequency with an electrostatic probe with double vertical and horizontal plates. Scintillation screens in the form of a grid with 85% transmission are used to show the beam position and diameter for 5 to 10 revs. The beam diameter is shown to be about 4 cm under normal conditions. Investigations are carried out on the optimum form of the frequency - time relation for holding the beam in orbit. The width of the trapping region is $\pm$ 3 Kc/s for an initial frequency of 750 Kc/s which agrees well with theoretical estimates. Preliminary adjustment permitted the attainment of 6.2 Gev protons and after adjustment 7.2 Gev protons were obtained on October 25, 1961. The usual intensity on a normal cycle lies in the range 3 to 5 x 10^9. There are 7 figures and 1 table.

ASSOCIATION: Institut teoreticheskoy i eksperimental'noy fiziki GKAE (Institute of Theoretical and Experimental Physics GKAE)

SUBMITTED: April 11, 1962

VLADIMIRSKIY, V.V.; KOMAR, Ye.G.; MINTS, A.L.; GOL'DIN, L.L.; MONOSZON, N.A.; RUBCHINSKIY, S.M.; TARASOV, Ye.K.; VASIL'YEV, A.A.; VODOP'YANOV, F.A.; KOSMACHEV, D.G.; KURYSHEV, V.S.; MALYSHEV, I.F.; STOLOV, A.M.; STREL'TSOV, N.S.; YAKOVLEV, B.M.

The 7 bev. proton synchrotron. Prib. i tekh. eksp. 7 no.4:5-9 Jl-Ag '62. (MIRA 16:4)

1. Institut teoreticheskoy i eksperimental'noy fiziki Gosudarstvennogo komiteta po ispol'zovaniyu atomnoy energii SSSR, Nauchno-issledovatel'skiy institut elektrofizicheskoy apparatury Gosudarstvennogo komiteta po ispol'zovaniyu atomnoy energii SSSR i Radiotekhnicheskiy institut Gosudarstvennogo komiteta po ispol'zovaniyu atomnoy energii SSSR.
(Synchrotron)

S/089/62/012/006/003/019
B102/B104

AUTHORS: Vladimirskiy, V. V., Komar, Ye. G., Minin, A. L., Rabinovich, S. M., Rabin, L. Z., Monoszon, N. A., Arbuzov, V. I., Fedosov, Yu. N., Vasil'yev, A. A., Velikhanov, F. A., Kashcheyev, D. G., Kurysh v, V. S., Malyshev, I. F., Stolov, [illegible], Strel'tsov, N. S., Yakovlev, B. M.

TITLE: The design of the 7-Bev proton synchrotron

PERIODICAL: Atomnaya energiya, v. 12, no. 6, 1962, 473-474

TEXT: The history of the first Soviet cyclic accelerator with rigid focusing is briefly described, and the most important data on its planning and operation are presented. Planning was started in 1957. The parameters of this proton accelerator, the energy of which exceeds the antinucleon production threshold, were so chosen that the dependence of the orbital circumference on the particle momenta was completely compensated. This was achieved by employing 14 quadrupole magnets with orbits of negative curvature. Technical data: output current, 10^{10} protons/pulse; maximum field strength, 8475 oe; length of equilibrium orbit, 451.2 m; radius of

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The design of the 7-rev ...

curvature of the trajectories in the bending magnets (C), 31 m, and in the compensation magnets (X), 10; number of magnetic sectors, 90 + 11X; gap length between the C-magnets, 704.5 mm; gap length around the X-magnets, 417.5 mm; index of the decrease in field strength, 1/2; internal height and width of the chamber, 50 and 110 cm, respectively; number of betatron oscillations per revolution, 1.75, and per periodic element, 0.1; number of magnets per periodic element, 8; total critical energy, 1.1 Bev; maximum deviation of the periodic orbit with 10% deviation of the momentum from the equilibrium momentum, 1.27 m; rate of energy increase per revolution, 1.1 kev; duration of one cycle, 1.15 sec; 10-12 cycles/min; particle revolution frequency at the beginning of the cycle, 0.11 Mc/sec, and at the end, 1.1 Mc/sec; frequency of synchrocyclotron oscillations, 3600 and 130 cps; weight of the electromagnet steel, 2500 tons; maximum power of the supply system, 25 Mw; Van de Graaff injector (particle energy, 0.8 Mev; field strength 90 oe); admissible deviations from field strength and field gradients, $\sim 10^{-3}$; deviations at the chamber edge due to nonlinearities, $\sim 10^{-4}$; admissible frequency deviation of the accelerating field at the beginning of the cycle, 10^{-3}, and at the end, $5 \cdot 10^{-5}$. There are 1 figure and 1 table.

SUBMITTED: March 12, 1962
Card 2/2

S/048/62/026/012/003/016
B117/B186

AUTHORS: Tret'yakov, Ye. F., Kondrat'yev, L. N., Grishuk, G. I., Novikova, G. I., and Gol'din, L. L.

TITLE: A double, air-core β-spectrometer having a toroidal field

PERIODICAL: Akademiya nauk SSSR. Izvestiya. Seriya fizicheskaya, v. 26, no. 12, 1962, 1470-1474

TEXT: A β-spectrometer for investigating modes of decay using a coincidence method is described. Its principle parts are two toroidal coils, each weighing 400 kg, placed one above the other and divided into 4 sections connected in parallel for cooling purposes. For each coil the distance between source and detector is 800 mm. Each coil consists of 600 insulated turns made of 0.7 mm stamped copper, which are assembled in 60 packages. They are symmetrical with respect to the median plane of the coil, connected in series, reinforced and cooled in the middle by 2 mm sheet brass provided with a water-cooled pipe. The dimensions and the resolution of the apparatus are determined by the distance f between the source (detector) and the median plane of the coil, and by the coefficient k

A double, air-core β-spectrometer ...

from the equation p(oe cm) = 0.2 ·ni (A), where p is the momentum of electrons to be focused, i the current intensity, and n the number of turns. f = 400, · = 0.8 were chosen as being optimum values. The coils are contained in an evacuated case carrying counter-turns on the outside to compensate parasitic fields which are set up when current flows through the coil. A vacuum lock in the middle of the case permits installation of sources between the two coils when they are operating independently. Next to the lock there are Wilson seals for the rods connected with exchangeable diaphragms. Adjustable scintillation counters with stilbene crystals, mounted perpendicular to the axis of the apparatus on separate flanges, serve as detectors. The coils are supplied from two current stabilizers controlled by d-c tube amplifiers. The power supply system makes it possible to maintain a stabilized current of 3 - 70 a for continuous operation at 80 v, or 160 v with the two coils connected in series. Each of the earth's magnetic field components is compensated to 1/50 by 3 threefold coils, connected in series, which are fed by a stabilizer made up of transistors. Debugging the apparatus is very simple; it comes down to checking that the components are accurately made and correctly assembled. With a 4-mm source and a 5-mm diaphragm, one section of the coil has a resolution of 0.45%. With an open diaphragm the

A double, air-core β-spectrometer ...

luminous intensity almost attains the geometrical value of 10% of 4π; with 0.45% resolution, it amounts to 2%. The resolution with an open exit diaphragm and a 4-mm source is 1%. The decrease in luminous intensity observed when the resolution is increased is related to the fact that the electrons are deflected in their trajectory by the stray field of the turns when they pass near the sections. The deflection of the trajectory can be partially compensated by switching in the second coil. This was confirmed in the case of a 4-mm source and a 5-mm diaphragm, with the second coil connected in series: the luminous intensity increased 1.5-fold and the resolution rose to 0.30%. The paper was presented at the 12th Annual Conference on Nuclear Spectroscopy held in Leningrad from January 26 to February 2, 1962. There are 4 figures and 1 table.

ASSOCIATION: Institut teoreticheskoy i eksperimental'noy fiziki AN SSSR
(Institute of Theoretical and Experimental Physics AS USSR)

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R000515630004-7"

GOL'DIN, L.L., doktor fiz.-mat. nauk; KOZEL, S.M.; [illegible]
N.N.; NAZAR'EV, I.F.; NOGINOVA, L.V.; [illegible]
NOSOV, N.A.; NIZHNIKOVA, Ye.n., red.

[Laboratory manual on physics] Rukovodstvo k laboratornym zaniatiiam po fizike. Moskva, Izd-vo "Nauka," 1964. 579 p.
(MIRA 17:5)

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R000515630004-7

L 43087-65 EWT(m)/EPA(w)-2/EWA(m)-2 Pab-10/Pt-7 IJP(c) GS

ACCESSION NR: AT5007917 S/0000/64/000/000/0137/0145

AUTHOR: Barabash, L. Z.; Veselov, M. I.; Gol'din, L. L.; Zenkevich, F. R.; Pligin, Yu. S.; Sivkov, Yu. P.; Talyzin, A. N.; Shegolev, V. A.

TITLE: Survey report: operation of the 7-Gev proton synchrotron of the ITEF

SOURCE: International Conference on High Energy Accelerators. Dubna, 1963. Trudy. Moscow, Atomizdat, 1964, 137-145

TOPIC TAGS: high energy accelerator

ABSTRACT: Operation of the 7-Gev accelerator for the period from September 1962 to May 1963 is discussed. The accelerator was run continuously from 9 a.m. Tuesday to 8 a.m. Saturday, i.e. 95 hours a week. On Saturday and Monday, preventive maintenance operations are carried out on the magnet and experimental rooms and on the accelerator itself. During the indicated period, the accelerator produced beams for physics experiments during 32% of the operating time and was used for 21% of the time for investigative studies on itself. Thus, the full useful time represented 53% of the calendar time. As for the physics experiments, the operations were directed mainly on two or three targets; here, the particles were distributed among three or four installations working independently. In the case of the

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investigations on the accelerator itself, studies were made on the various operational conditions, the form and behavior of the equilibrium orbit, the frequencies of betatron oscillations, the entrapment of particles during acceleration, the effectiveness of fast and slow targets, methods of operating on several targets, etc. At the beginning of the indicated period, the frequency of recurrence was 10 cycles a minute. In mid January it increased to 12 cycles a minute, and at the present time work is being conducted on enhancing it further. The forms of the operating magnetic cycle are discussed. The main work at present is conducted in the case of the trapezoidal form, since introduction of the flat portion sharply enhances the mean power and forces a lowering of the frequency of recurrence of cycles. Transition to the trapezoidal cycle is effected by regulation of the excitation current in the main generator. In the case of the triangular form of the cycle, the current in the magnetic blocks increases linearly for 1.57 seconds from 0 to 2.4 kiloamperes. The inverter state is held for 0.78 second. The variation of the mean (averaged over a week) current strength of the beam of accelerated particles for the indicated period is discussed. The observed beam intensity (about $1.5 \cdot 10^{10}$ particles per pulse) is determined by the main injector, which injects $(7-8) \cdot 10^{10}$ particles into the accelerator. Work is going on at present to increase the number of injected particles and also the coefficient of capture. The

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ACCESSION NR: AT5007917

kinetic energy of the protons at the end of the cycle is 7.3 Gev. 31 beam observation stations are now used. Orig. art. has 10 figures, 7 formulas, 3 tables

ASSOCIATION: Institut teoreticheskoy i eksperimental'noy fiziki GKAE SSSR
(Institute of Theoretical and Experimental Physics, GKAE SSSR)

SUBMITTED: 26May64 ENCL: 00 SUB CODE: NP

NO REF SOV: 006 OTHER: 002

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Card 3/3

APPROVED FOR RELEASE: Thursday; September 26, 2002 CIA-RDP86-00513R000515630004-7"

ACCESSION NR: AP4041040 S/0120/64/000/003/0152/0157

AUTHOR: Kats, M. Ya.; Stadnikov, A. G.; Gol'din, L. L.; Baranov, V. V.

TITLE: Method for designing the pole shape for single-zone isodynamic magnetic separators

SOURCE: Pribory* i tekhnika eksperimenta, no. 3, 1964, 152-157

TOPIC TAGS: separator, magnetic separator, single zone magnetic separator, isodynamic magnetic separator

ABSTRACT: A method of calculating isodynamic fields is described; it is suitable for both the single-zone magnetic separator design and the measurements of magnetic susceptibility. Since the neutral pole obstructs the entrance into the gap, it is desirable that the isodynamic field be created without the neutral pole. Formulas that describe the pole shape ensuring a quasi-isodynamic field without the neutral pole are developed. Curves plotted in dimensionless coordinates

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ACCESSION NR: AP4041040

based on experimental data are submitted as a verification of the formulas. Hints for the practical design of pole shapes are given. Orig. art. has: 4 figures and 16 formulas.

ASSOCIATION: Geologicheskiy institut AN SSSR (Geology Institute, AN SSSR)

SUBMITTED: 03Jul63 ENCL: 00

SUB CODE: EM NO REF SOV: 011 OTHER: 008

Card 2/2

L 43088-65 EWT(m)/ EPA(w)-2/ENA(m)-2 Pab-10/Pt-7 IJP(c) JD/JS

ACCESSION NR: AT5007916 S/0000/64/000/000/0197/0201

AUTHOR: Vladimirskiy, V. V.; Gol'din, L. L.; Koshkarev, D. G.; Tarasov, Ye. K.; Yakovlev, B. M.; Gustov, G. K.; Komar, Ye. G.; Kulikov, V. V.; Kalyshev, I. F.; Monoszon, N. A.; Popkovich, A. V.; Stolov, A. M.; Strel'tsov, N. S.; Tikov, V. A.; Vodop'yanov, F. A.; Kuz'min, A. A.; Kuz'min, V. F.; Mints, A. L.; Rubchinskiy, S. M.; Uvarov, V. A.; Zhadanov, V. M.; Filaretov, S. G.; Shiryayev, F. Ya.

TITLE: 60-70 Gev Proton Synchrotron

SOURCE: International Conference on High Energy Accelerators. Dubna, 1963. Trudy. Moscow, Atomizdat, 1964, 197-201

TOPIC TAGS: high energy accelerator, synchrotron

ABSTRACT: A 60-70 Gev proton synchrotron with strong focusing is being constructed not far from Serpukhov, as has been reported earlier (e.g. "Research Institute for Electro-Physical Equipment, Leningrad," in Proceedings of the International Conference on High Energy Accelerators and Instrumentation (CERN, 1959), p. 373). The present report describes parameter changes and improvements in precision structural characteristics of the accelerator, and the present state of construction in mid-1963. The parameters of the magnet are presented in a table. A small change in the original plans permitted an increase in the length of a part of the free

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APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R000515630004-7

ACCESSION NR: AT5007918

sections, some of which are utilized for input and exit of beams. The super-period design is described. The lengthened sections were obtained as a consequence of shortening the focusing and defocusing blocks by 112 cm. The focusing properties of the magnetic channel were diminished consequently, but very little; and the limiting energy was lowered by 2-3 Gev. The construction of the magnet is described. Each of the magnetic blocks is divided lengthwise into 5 sub-blocks which are enveloped by the common winding. These sub-blocks consist of laminar two-millimeter silicon steel. These steel sheets were stamped out without subsequent mechanical working, and were subjected to sorting and intermixing in order to smooth out their magnetic characteristics. The sub-blocks are constricted by lateral welded plates without adhesion. Provision was made for windings on the poles in order to correct for pole nonlinearity and for variations in the drop reading. These windings make it possible to introduce artificial quadratic (square) nonlinearity that changes the dependence of the frequency of transverse oscillations during a pulse. In order to correct for straying of the residual field, provision has been made for windings on the yoke in series with the main winding. The sub-blocks must undergo calibration on a magnet stand in order to make correcting systems more precise and to determine the most convenient disposition of the sub-blocks along the ring. The winding of the electromagnet is made of aluminum busbars with hollow cores for cooling water. The length of the busbar is so selected that there would be no

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welded joints inside the coils. The winding consists of 4 sections, two of which are disposed on the upper pole and two on the lower. The most important characteristics of the electromagnet and power supply system are described in a table. Also described are the vacuum chamber and accelerating field (obtained by 93 paired resonators with ferrite rings, which operate at the 30-th harmonic of revolution and give accelerating potential of 350 kilovolts). The ring tunnel and the general arrangement of the accelerator are shown in figures and described. The building for the injector and portions of the ring tunnel from the injector to the experimental room have been completed in the main and are ready for installation of equipment. This room, in the form of a single-aisle building without internal supports, permits one to work on beams brought into the inner and outer sides. A 90-meter arch covers this room, whose overall length is 150 meters. Provisions have been made for a second experimental room at the southwest part of the ring. Orig. has 4 figures, 2 tables.

ASSOCIATION: Institute teoreticheskoy i eksperimental'noy fiziki GKAE SSSR (Institute of Theoretical and Experimental Physics, GKAE SSSR). (2) Nauchno-issledovatel'skiy institut elektrofizicheskoy apparatury imeni D. V. Yefremova GKAE SSSR (Scientific Research Institute of Electrophysical Apparatus, GKAE SSSR).

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L 43088-65

ACCESSION NR: AT5007918

(3) Radiotekhnicheskiy institute AN SSSR (Radio Engineering Institute, Academy of Sciences SSSR). (4) Gosudarstvennyy proyektnyy institut GKAE SSSR (State Planning Institute, GKAE SSSR).

SUBMITTED: 26May64 ENCL: 00 SUB CODE: EE, NP

NO REF SOV: 002 OTHER: 001

Card 4/4

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R000515630004-7"

L 3775-66 EWT(m)/EPA(w)-2/EWA(m)-2 IJP(c) GS

ACCESSION NR: AT5007948 S/0000/64/000/000/0705/0710

AUTHOR: Gol'din, L. L.; Goryachev, Yu. M.; Kuryshev, V. S.; Sokolov, L. I.

TITLE: Output of particles from the proton synchrotron at the Institute of Theoretical and Experimental Physics (ITEP) and survey of the main beams

SOURCE: International Conference on High Energy Accelerators. Dubna, 1963. Trudy. Moscow, Atomizdat, 1964, 705-710

TOPIC TAGS: synchrotron, proton beam, magnetic field

ABSTRACT: The design of the magnetic system (Monosyon, N. A.; Strel'tsov, N. S.; Ostrovskiy, N. A., *Pribory i tekhnika eksperimenta* (Experimental Instruments and Techniques), No 4, 10, 1962) of the proton synchrotron at the ITEP (Vladimirskiy, V. V.; Komar, Ye. G.; Mints, A. L.; Gol'din, L. L.; et al., *ibid*), possesses peculiarities which lead to certain difficulties in the output of the beams. The accelerator has no linear intervals, and also no portions where the yokes of neighboring magnetic blocks amounts in all to about 30 cm. In addition, there are neutral poles in the turning blocks. On one side of the vacuum chamber is the neutral pole, and on the other side, in the narrow part of the interpolar gap, is a region of large inhomogeneous magnetic field. The report discusses the methods of parti-

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cle extraction on the ITEP's accelerator. The extraction of particles through the narrow part of the interpolar gap is connected with a substantial analysis of charged particles in the magnetic field of the block (Malyshev, I. F.; Popkovich, A. V.; Borisov, V. S.; Goryachev, Yu. M.; et al., *ibid.*), requiring computation of the trajectories of the particles on an electronic computer. The most interesting method of extraction is that in which the particles fly out from the target at an angle of 10-13° to the direction of the primary protons, which pass through an aperture drilled obliquely in the neutral pole of the S-block (proposed by Yu. V. Trebukovskiy). The most important advantage of this method is the absence of a magnetic field in such a small path that they experience hardly any deflection there. During input into the neutral pole, the particles are incident into a region where the magnetic field is practically absent. Therefore, the output of particles through the neutral pole is equally good for both negative and positive particles. It is also convenient to extract the neutral particles through the aperture in the neutral pole. Thus the beams of particles extracted by this method are universal. The report also discusses the arrangement of the beams of secondary particles and of the experimental installation by the accelerator. There are at present nine beams which are extracted from six internal targets arranged between certain blocks. These beams are discussed in detail. At the present time the accelerator has no arrangement for the direct extraction of the primary beam. The scattering

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ACCESSION NR: AT5007948

of protons and the generation of the secondary particles are realized with the aid of internal targets, which are divided into two types: fast and slow. The fast targets are intended for work with electronics. A universal driven mechanisl ensures the operation of both the fast the the slow targets. It consists of two identical parts which can be employed independently. The report discusses the simultaneous operation of several targets. To enhance the effectiveness of accelerator operation, methods were developed for the division of the intensity of the primary beam among several targets during the course of one acceleration cycle. In all cases the targets are introduced in succession one after the other. The fast targets, by intercepting the beam, remove a small part of the intensity. The remaining intensity is used against a slow target. Control over the distribution of the intensity of the primary beam among the targets is realized by means of an oscillograph (Kuz'min, A. A., *ibid.*). "The authors wish to thank G. F. Orlov and Yu. A. Bol'shakov for their active participation in the work on the installation of the magnets and lenses; Yu. S. Krestnikov for his valued advice; and also other associates for their service in controlling the synchrotron." Orig. art. has: 6 figures, 2 tables.

ASSOCIATION: Institut teoreticheskoy i eksperimental'noy fiziki GKAE SSSR (Institute of Theoretical and Experimental Physics, GKAE SSSR)

SUBMITTED: 26May64 ENCL: 00 SUB CODE: NP

NO REF SOV: 007 OTHER: 000

Card 3/3

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R000515630004-7"

L 14438-66 EWT(m)/T IJP(c)
ACC NR: AT6002500 SOURCE CODE: UR/3130/65/000/362/0001/0012

AUTHOR: Birger, N. G.; Borisov, V. S.; Bysheva, G. K.; Gol'din, L. L.; Korotkov, M. M.; Martusov, Ye. T.; Sidorenko, Z. S.; Tumanov, G. K.

ORG: none

30
B+1

1955

TITLE: Measurement of proton momentum as a function of acceleration time on the synchrotron at the Institute of Theoretical and Experimental Physics

1955

SOURCE: USSR. Gosudarstvennyy komitet po ispol'zovaniyu atomnoy energii. Institut teoreticheskoy i eksperimental'noy fiziki. Doklady, no. 362, 1965. Izmereniye zavisimosti impul'sa protonov sinkhrotrona ITEF ot vremeni uskoreniya, 1-12

TOPIC TAGS: proton beam, synchrotron, particle physics

ABSTRACT: A beam of particles emitted at an angle of 0.222 rad to the direction of incident proton was analyzed by an SP-12 magnet located 13 m from a polyethylene target. Positively charged particles deflected by this magnet at an angle of 0.262 rad reached the detector. The detector count rate was measured as a function of magnet current. The energy of elastically scattered protons was used as a basis for determining momentum. The measurements were made at four different time intervals

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from the beginning of the acceleration cycle. The following table gives the results of these measurements

Results of measurements of proton momentum P as a function of acceleration time

t in sec	$P(1 \pm \delta P/P)^d$ in bev/c
0.404	2.20 (1 ± 0.006)
0.408	2.25 (1 ± 0.006)
0.813	4.45 (1 ± 0.006)
0.817	4.49 (1 ± 0.006)
1.176	6.35 (1 ± 0.006)
1.420	7.64 (1 ± 0.009)

where $\frac{\delta P}{P}$ is the relative error in momentum determination. The experimental errors are analyzed and the following formula is given for proton momentum as a function of acceleration time: $P = 0.08 + 5.34\ t$. Orig. art. has: 6 figures, 1 table, 1 formula.

SUB CODE: 20/ SUBM DATE: 21Jun65/ ORIG REF: 002/ OTH REF: 000

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R000515630004-7"

GOL'DEN, L.S.

Method of the preparation of [illegible] from plants of the Polygonaceae family. Dokl. AN SSSR 1 no.2 (1948)

1. Laboratory [illegible] Institute [illegible]

USSR/Medicine - Nerves, Peripheral Oct 48
Medicine - Nerves, Sciatic, Examination

"Electron-Microscopic Study of the Peripheral Nerve," L. S. Col'din, 4 pp

"Dok Ak Nauk SSSR" Vol LXII, No 4

Results of microscopic study of the peripheral nerve. Photographs show sciatic nerve of full-grown cat, sciatic nerve of adult rabbit, and spinal nerve of axolotl. Concludes that elements which enter into composition of microstructure of peripheral nerves appear as elongated fibers parallel to lengthwise axis of the nerve. Submitted by Acad L. A. Orbeli, 17 Jul 48.

33/49T67

GOLUBEVA, I.

Materials on the embryonic and postembryonic development of the cerebral cortex; on the problem of the unity of [illegible].
Trudy Gos.inst. po izuch.mozga im.V.M.Bekhtereva. [illegible]
(CEREBRAL CORTEX)

Materials on the embryonic development of the spinal cord. [illegible]
Anat. Rec., 90 [illegible] 16:215-238, illus.

GOL'DIN, L.S.; KOMISSARCHIK, Ya.Yu.

Histological microtomy technique for the purposes of electron microscopy. Dokl.AN SSSR 95 no.1:171-174 Mr '54. (MLRA 7:3)

1. Leningradskiy psikhonevrologicheskiy institut im. V.M.Bekhtereva.
(Histology) (Electron microscope)

GOL'DIN, L. . .

USSR/Medicine - Neurology

Card 1/1 Pub. 22 - 45/54

Authors : Gol'din, L. S.

Title : Electron microscopy of nerve cells in the cerebral cortex of human and other mammals

Periodical : Dok. AN SSSR 102/5, 1019-1022, Jun 11, 1955

Abstract : A method was developed for the study of nerve cells of the cerebral cortex by means of an electron microscope. Results obtained by the new method applied to humans and other mammals are listed. Four references: 2 USSR, 1 USA and 1 German (1935-1954). Illustrations.

Institution : The V. M. Bekhterev Psychoneurological Inst., Leningrad

Presented by : Academician L. A. Orbeli, January 21, 1955

USSR / Human and Animal Morphology. Nervous System. S-1

Abs Jour : Ref Zhur - Biol., No 5, 1958, No 21655.

Author : Gol'din, L. S., Myasishchev, V. N.
Inst : Not given
Title : Structural Changes in the Cerebral Cortex During Intensive Excitation Based on Electron Microscopy Data.

Orig Pub : Zh. vyssh. nervn. deyat-sti, 1956, 6, vyp. 4, 621-629

Abstract : Electron-microscopic structure of the nerve cells in frontal parietal and central areas of the /cortex of rats/ underwent changes while it was in a state of excitation caused by a passage of electric current through the bases of cells or by the effect of a conditioned stimulus (bell ringing and the noise of a sound operator). There was almost a ten-fold increase in the thickness of nuclear membrane and the cells with preponderately large granules in their nuclei were more frequently encountered. Nuclei and protoplasmic granules were, mostly, larger than in control animals.

Card 1/2

GOL'DIN, L.S.

Electron microscope examination of the human epidermis. Dokl. AN SSSR 109 no.1:197-200 Jl-Ag '56. (MIRA 9:10)
1. Gosudarstvennyy psikhonevrologicheskiy institut imeni V.M. Bekhtereva. Predstavleno akademikom L.A. Orbeli.
(EPIDERMIS)

AUTHOR: GOL'DIN,L.S., KOMISSARCHIK,YA.YU. PA - 3369

TITLE: Nerve Fibre Sheath of a Peripheral Nerve Examined with the Aid of Electron Microscope. (Elektronnaya mikroskopiya obolochki nervnogo volokna periphericheskogo nerva, Russian)

PERIODICAL: Doklady Akademii Nauk SSSR, 1957, Vol 113, Nr 2, pp 433 - 435 (U.S.S.R.)

ABSTRACT: In the opinion of several authors the myelin sheath consists of single layers, which are on the average 80 Å thick and which are located concentrically round the axis cylinder. Nageotte consideres the neurokeratin skeleton as an artefact. The authors investigated the sciatic nerve of the white rat. Their results show that there are two sorts of nerve fibres in the peripheral nerve. They differ from each other by the thickness and the different structure of the sheath. In the case of the first kind it is relatively thick, with a diameter of 2 - 3 and more μ, whereas in the second case it is less than 0,5 μ and frequently below the resolving power of the light-microscope. The structure of the sheath is shown in illustration 1 and 3. On the basis of results obtained the authors maintain that, although the sheath of fine and very fine nerve fibres could contain a certain quantity of lipoids, it would be too early yet to abandon the classification of the peripheral nerve, which, at present, is being generally adopted in light-

20-3-37/52

AUTHORS: Bobkova, V. V., Gol'din, L. S., and Kvasnichev, V. N.

TITLE: Electron Microscopy of the Nerve Cells of Brain Cortex in a State of Intense Excitation (Elektronnaya mikroskopiya nervnykh kletok kory mozga pri sostoyanii intensivnogo vozbuzhdeniya)

PERIODICAL: Doklady AN SSSR, 1957, Vol. 117, Nr 3, pp. 491- 493 (USSR)

ABSTRACT: The authors have studied the submicroscopic structure of the nerve cells of the brain cortex of white rats, in order to precise the question of the rôle, which plays the nucleus at the metabolism of the cells. Two states were studied: 1.) State of excitation caused by conditional irritating effect and an electric supporting on the epidermis, 2.) state of intense excitation, caused by a spasm-causing electric effect. In order to work out a conditional motive reaction, the method of Vladimirova (reference 2) was used. The spasms were induced by an electro-shock apparatus (85 - 95 V, during 0,5 sec.).The animal immediately was killed by dipping in liquid nitrogen (during 3 - 5 sec.). The brain, although being cooled down quickly, did not yet attain the intense frozen state. From 20 animals 4 were in a relatively quiete - , 13 in an excited state, in different stages of working out of the conditional motive re-

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Electron Microscopy of the Nerve Cells of Brain Cortex in a State of Intense Excitation

action and differentiation, finally, 3 in the state of most intense excitation on account of electrically induced spasms. The clearing up of structural variations of the cells of brain cortex, being in the initial stage of working out the conditional motive reaction, further in the stage of a fully developed reaction and the following differentiation, were the object of further investigation. Results obtained at the control animals, are described in earlier works (references, 3, 5). The following results were obtained at the treated animals, viz. conclusions were drawn from them: the cells of brain cortex undergo the following variations in the course of both methods of treatment: a) within the nucleus. Beside the aggregation phenomena of its granular elements, a strengthened removal of the nucleus content into the cell protoplasm is most important. Therewith the cellular membrane partly or completely disappears. According to the opinion of the authors this fact is connected with the different stages of the "paranecrosis". There is no reason for the maintaining that within the above process only the material of the nucleolus and the heterochromatin are included (as in references 11, 12). The photographs (figure 1) show that the whole rest of the nucleus material is affected, and

Electron Microscopy of the Nerve Cells of Brain Cortex in a State of Intense Excitation

that from its granular elements nuclei arise, appearing at fixed preparations. According to observations of Alexsandrov, Manoylov and Orlov (reference 1) this corresponds to the state of an irreversible paranecrosis, the fact of which, however, still requires further observations. The results of the authors confirm the standpoint by Altmann (reference 10) and show that the phenomena within the nerve cells of brain cortex in an intensely excited state principly have the same character, as the phenomena within the cells of the secretory organs in the state of functional activity. According to publications and own observations it may be conceivable that the state of excitation of the nerve cells is a process, the nucleus chromatin and the ribonucleotides at which remove from the nucleus into the protoplasm of the nerve cells and then leave the limits of the latter. There are 1 (2) figures, and 12 references, 9 of which are Slavic.

Electron Microscopy of the Nerve Cells of Brain Cortex in a State of Intense Excitation

ASSOCIATION: Psychoneurological Institute imeni V. M. Bekhterev, Leningrad (Psikhonevrologicheskiy institut im. V. M. Bekhtereva, Leningrad)

PRESENTED: July 15, 1957, by L. A. Orbeli, Academician

SUBMITTED: July 3, 1957

AVAILABLE: Library of Congress

AUTHOR: Gol'din, L. S. 20-4-44/52

TITLE: Electron Microscopy of Human Erythrocytes (Elektronnaya mikroskopiya eritrotsitov cheloveka).

PERIODICAL: Doklady AN SSSR, 1957, Vol. 117, Nr 4, pp. 701-703 (USSR)

ABSTRACT: The opinions on the submicroscopical structure of these corpuscles are wiedely differing. Several authors are of opinion that these corpuscles are structureless. Studying this problem, the author applied the double-film-method ("metod dvoynoy plenki"). Erythroytes were brought on a pellicle of Zapon varnish in alcohol according to Ranv'ye (dilution 1 : 4), and covered with a second film of this kind. This method offers many advantages. Human blood of both sexes who were not affected by blood diseases, has, besides erythrocytes of homogeneous structure, always cells with a complicated inner structure. They cannot be counted amongst unripe or pathologically changed cells which are known from light-optical histology. 2 species of such cells can be distinguished (figure 1 a). The cell to the left shows in its interior a stroma built from trabeculae. The trabeculae which are reticularly connected, can be thicker,

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or thinner; the former may be situated deeper in the interior. The trabeculae remind small tubes, or grooves and they end at the border of the cell as sti mata, or stomates. The cell to the right is distinctly diff rent from the previously described, by a bright oval. The stroma contains here numerous corpuscles 1/ to 1/15 μ of seize. They are connected with each other by superfine fibers. The bright part is apparently covered by a membrane. The remaining dark part has a membrane. The latter, however, is thin enough to let the stroma show through. The structure of the stroma is similar with both parts of the cell: There are circlets visible with very thin fibers d pending on them, which interconnect the small circles (= ringlets). The border of this cell is ed ed by a filiform formation which is not thicker than 0,1 μ. It consists of several parts which are connected by brid es and may be compared with Kabot's rings known from optical histology. The situation on the periphery of the cell, however, would not be typical for this. A picture similar to fi ure 1 a is shown in fi ures 1 b, and 1 v. It may be assumed that the differences in the inner structure of the forms

described above, originate from various ages and differently long stays in the blood-passage. The cell of figure 1 v, reminding the erythrocytes II, might be younger. Yet there is no sufficient reason to consider these forms as reticulocytes. It results from these facts that the life-cyclus of the erythrocytes shows a series of pecularities which cannot be disclosed by means of photooptics.
There are 1 figure, and 6 references, 1 of which is Slavic.

ASSOCIATION: Psychoneurological Institute imeni V. M. Bekhterev Leningrad. (Psikhonevrologicheskiy institut im. V. M. Bekhtereva Leningrad).

PRESENTED: July 15, 1957, by L. A. Orbeli, Academician

SUBMITTED: July 3, 1957

AVAILABLE: Library of Congress

AUTHORS: Komissarchik, Ya.Ya., Vertsner, V.N., Gol'din, L.S. SOV/48-23-4-9/21

TITLE: A Simplified Ultramicrotome (Uproshchennyy ultramikrotom)

PERIODICAL: Izvestiya Akademii nauk SSSR, Seriya fizicheskaya, 1959, Vol 23, Nr 4, pp 473 - 477 (USSR)

ABSTRACT: The authors Ardenne, Richard and Shostrand have shown that histological preparations with a thickness exceeding 0.1 μ were not suited for electron microscopic investigations. Later investigations by Liebman and Ornstein showed that in massive preparations with a thickness not exceeding 300 Å, a resolution up to 20 Å could be attained at 50 kv accelerating voltage. At an accelerating voltage of 100 kv and a preparation thickness of 0.1 μ a resolution of up to 20 Å is obtained. The method of using replicas, which are thin transparent films pressed on the surface of metallographic samples and thereupon removed for examination, gives inaccurate results because the fine structure of replicas is demolished on removal. The utilization of hyperfine sections (preparations) of histolcgical objects offers the most favorable investigation conditions and great

Card 1/3

A Simplified Ultramicrotome

interest is devoted to instruments for the preparation of hyperfine sections. The principle governing this ultramicrotome is described: static knife and object moved with respect to it. Next, the ultramicrotome suggested by Latta and Hartman (Ref 3), featuring a glass knife, is described. By the method suggested by Newman and collaborators, which contemplates utilizing the linear extension of a heated metal rod as a feed for the preparation, Hodge and collaborators attained thicknesses of 10-20 Å. The simplified ultramicrotome developed by the authors consists of the following main parts: the object is fastened at the end of a unilaterally fixed steel shaft, which is worked out as an equal-strength beam (maximum diameter 10 mm, minimum 6 mm, 380 mm long). The free end of the steel shaft is moved upon an ellipse-shaped path by a lever arrangement. A knife is fastened onto a support. The object is then moved by the knife, while the shaft is electrically heated between two cuts. Sitte's method (Ref 5) is mentioned in this connection. The lever arrangement was devised by Chebyshev. A binocular microscope MBS-1 serves for observation. There are 5 figures and 7 references, 2 of which are Soviet.

A Simplified Ultramicrotome SOV/48-23-4-9/21

ASSOCIATION: Psikhonevrologicheskiy institut im. V.M. Bekhtereva
(Psychoneurological Institute imeni V.M. Bekhterev).
Gos. opticheskiy institut im. S.I. Vavilova
(State Optical Institute imeni S.I. Vavilov)

Card 3/3

MYASISHCHEV, V.N.; GOL'DIN, L.S.; BOBKOVA, V.V.

Electron microscopy of the cerebral cortex in convulsions induced by electricity. Zhur. nevr. i psikh. 59 no.1:89-97 '59. (MIRA 12:3)

1. Laboratoriya elektronnoy mikroskopii (zav. - doktor med. nauk L.S. Gol'din) Psikhonevrologicheskogo instituta imeni V.M. Bekhtereva, Leningrad.

(SCHIZOPHRENIA, compl.
periodic schizophrenia with paraphrenic synd. (Rus))
(PARANOIA
paraphrenic synd. in periodic schizophrenia (Rus))

AGEYEVA, A.N.; GOL'DIN, L.S.; ZAKHAROVA, V.V.; PEREVOSHCHIKOVA, G.F.

Some modern methods in morphological investigation and their use in a clinic for nervous and mental diseases. Trudy Gos. nauch.-issl. psikhonevr. inst. no.20:29-34 '59. (MIRA 14:1)

1. Gosudarstvennyy nauchno-issledovatel'skiy psikhonevrologicheskiy institut imeni V.M. Bekhtereva, Leningrad.
(NERVOUS SYSTEM--DISEASES)

GOL'DIN, L.S., SOKOLOV, A.A.; KOMISSARCHIK, Ya.Yu.

Ultramicrotome on conic supports. TSitologiia 2 no.3:374-376 My-Je '60. (MIRA 13:7)

1. Laboratoriya elektronnoy mikroskopii Psikhonevrologicheskogo instituta, Leningrad.

(MICROTOME)

GOL'DIN, L.S.; PETROV, V.S.

A method for embedding histological material in methacrylate. Biofizika 5 no.3:375-378 '60. (MIRA 13:7)

1. Psikhonevrologicheskiy institut im. V.M. Bekhtereva, Leningrad.
(HISTOLOGY) (METHACRYLIC ACID)

GOL'DIN, L.S.

Electron microscopy in psychoneurology. Trudy Gos. nauch.-issl. psikhonevr. inst. no.24:277-297 '61. (MIRA 19:5)

1. Laboratoriya elektronnoy mikroskopii Gosudarstvennogo nauchno-issledovatel'skogo psikhonevrologicheskogo instituta imeni Bekhtereva.
(ELECTRON MICROSCOPY) (MENTAL ILLNESS)

GOL'DIN, L.S.

Method of embedding in methacrylate without the use of gelatin capsules. TSitologiia 3 no.3:357-359 My-Je '61. (MIRA 14:6)

1. Laboratoriya elktronnoy mikroskopii Psikhonevrologicheskogo instituta, Leningrad.
(MICROSCOPY—TECHNIQUE) (METHACRYLIC ACID)

MYASISHCHEV, V.N.; GOL'DIN, L.S.; PETROV, V.S.; BOEKOVA, V.V. (Leningrad)

Changes in the cerebral cortex of white rats following some pathological effects. Arkh.pat. no.1:70-78 '62. (MIRA 15:1)

1. Iz laboratorii elektronnoy mikroskopii (zav. L.S. Gol'dir) Psikhonevrologicheskogo instituta imeni V.M. Bekhtereva (dir. - prof. V.N. Myasishchev).

(CEREBRAL CORTEX)

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R000515630004-7"

GOL'DIN, L.S.

Materials on the submicroscopic structure of the reticular formation as revealed by electron microscopy. Trudy Gos.nauch.-issl.psikhonevr.inst. 28:311-339 '62. (MIRA 15:12)
(ELECTRON MICROSCOPY) (NERVES)

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R000515630004-7"

[illegible], Lev Nikolaevich. Prinimal uchastiye K. I. [illegible], Ya. Yu., [illegible], A. K., red. [illegible], Ye. D. [illegible], tekhn. red.

[Some methods of histology, histochemistry and electron microscopy] Obshchiye metody gistologii, gistokhimii i elektronnoi mikroskopii. Moskva, Medgiz, 1962. 259 p. (MIRA 16:5)
(HISTOLOGY) (HISTOLOGY--TECHNIQUE)

GOL'DIN, L.S.

Design and check of the working profile of sprockets for free-wheeling mechanisms. Stan. i instr. 34 no.9:17-19 S '63. (MIRA 16:11)

GOL'DIN, M., doktor biolog. nauk

Conference of virologists in Moscow. Zashch. rast. ot vred. i bol. 10 no.1:54-56 '65. (MIRA 18.3)

1. Institut mikrobiologii AN SSSR.

BOL'DIN, M.

Maintainance of carburetor motors. No 6.

Tankist, No 12, 1948.

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R000515630004-7"

(Gol'din, M.A.)

GOL'DIN, M.A., inzhener.

Ventilating buildings of washing and steaming stations. Trans. stroi. 7 no.4:25 Ap '57. (MIRA 10:10)
(Railroads--Building--Heating and ventilation)